



**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials**

PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 18-20. September 2017.**

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Dr Lidija Mančić

Dr Nina Obradović

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Dr Lidija Mančić

Dr Nina Obradović

Ivana Dinić

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Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference VI organized by the Serbian Ceramic Society in cooperation with the Institute for Testing of Materials, Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy and Institute for Technology of Nuclear and Other Raw Mineral Materials.

Advanced Ceramics today include many old-known ceramic materials produced through newly available processing techniques as well as broad range of the innovative compounds and composites, particularly with plastics and metals. Such developed new materials with improved performances already bring a new quality in the everyday life. The chosen Conference topics cover contributions from a fundamental theoretical research in advanced ceramics, computer-aided design and modeling of a new ceramics products, manufacturing of nanoceramic devices, developing of multifunctional ceramic processing routes, etc. Traditionally, ACA Conferences gather leading researchers, engineers, specialist, professors and PhD students trying to emphasizes the key achievements which will enable the wide spread use of the advanced ceramics products in High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, prosthesis, etc.

Serbian Ceramic Society has been initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as Serbian Ceramic Society in accordance to the Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in the South-East Europe, with members from more than 20 Institutes and Universities, active in 16 sessions, by program and the frames which are defined by the American Ceramic Society activities.

For the first time Advanced Ceramic and Application Conference hosting delegations from Republics of Ghana, Nigeria, Niger and Cameroon with the idea to connect, share and provide positive influence to the scientific and industrial communities all around world.



Prof. Dr Vojislav Mitić
President of the Serbian Ceramic Society
World Academy Ceramics Member
European Academy of Sciences&Arts Member



Prof. Dr Olivera Milošević,
President of the General Assembly of the
Serbian Ceramic Society
Academy of Engineering Sciences of Serbia Member

Conference Topics

- Basic Science & Sintering of Ceramics
- Nano, Bio- & Opto Ceramic
- Electro & Multifunctional Ceramics
- Magnetic, Catalytic & Composite Materials
- Renewable Energy, Heritage & Archeology
- Industrial Talks

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**Facile synthesis of hydrophilic polymer-capped upconverting NaYF₄:
Yb,Er particles**

Ivana Dinic¹, Lidija Mancic², Marko G. Nikolic³, Katarina Radulovic⁴, Bojan A.
Marinkovic⁵, Olivera Milosevic¹

¹*Innovation Center of the Faculty of Chemistry, University of Belgrade, Serbia*

²*Institute of Technical Sciences of SASA, Belgrade, Serbia*

³*Photonic Center, Institute of Physics Belgrade, University of Belgrade, Zemun, Belgrade,
Serbia*

⁴*Department of Microelectronic Technologies, Institute of Chemistry, Technology and
Metallurgy, University of Belgrade, Serbia*

⁵*Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio
de Janeiro, Rio de Janeiro, Brazil*

Over the last decade, solvothermal decomposition of organometallic compounds has been indicated as one of the most convenient method for the synthesis of monodisperse lanthanide doped upconverting fluorides. Due to their hydrophobic nature such particles could not be used for a conjugation of the molecular targeting agents which is necessary for optical imaging of biological tissues. In this work, hydrophilic NaYF₄:Yb,Er (17 mol% Yb; 3 mol% Er) nanoparticles were synthesized by facile one-pot hydrothermal synthesis performed with a help of chitosan (CS) and poly(acrylic acid) (PAA). Obtained powders were analyzed by X-ray powder diffraction (XRPD), field emission scanning electron microscopy (FE-SEM), Fourier transform infrared (FTIR) and photoluminescence (PL) spectroscopy. The obtained results implied that particle size, shape and surface characteristics are dependent on the polymer choice. Although both powders crystallize in the same crystal arrangement (cubic, *Fm-3m*) more intense red emission, assigned to the Er³⁺ ⁴F_{9/2} → ⁴I_{15/2} electronic transitions, characterize spherical NaYF₄:Yb,Er@CS particles. To assess a biological safety of their use, viability of the human gingival fibroblasts (HFG) was additionally tested by a colorimetric MTT assay.

P8

**Al,Fe,Ni-pillared bentonite in catalytic wet peroxide oxidation of textile dye
Acid Yellow 99**

T. Mudrinić, M. Ajduković, D. Jovanović, S. Marinović, Z. Mojović, A. Milutinović-Nikolić,
P. Banković

*University of Belgrade - Institute of Chemistry, Technology and Metallurgy
Center for Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Serbia*

In this work catalytic performance of Al,Fe and Al,Fe,Ni-pillared bentonite was studied in the heterogeneous catalytic wet peroxide oxidation (CWPO) of textile dye Acid Yellow 99 used as a model compound. Pillared bentonites were synthesized using the bentonite from Mečji Do, Serbia and the pillaring solutions contained the different molar ratios of Al³⁺, Fe³⁺ and Ni²⁺ cations: a) 90 % Al, 10% Fe (AlFe10-PILC), b) 85% Al, 10% Fe,